REMARKS

Claims 1-15 were previously pending in the application. New claims 16-20 are added. Therefore, claims 1-20 are presented for consideration.

Claims 1, 3, 6, 8, 11 and 13 are rejected as unpatentable over TSUCHIYA et al. 5,136,473 in view of FONG et al. 5,069,683.

Reconsideration and withdrawal of the rejection are respectfully requested because the references do not disclose or suggest electrodes which include activated carbon particles, a binder binding said activated carbon particles and an electrolytic solution as recited in claim 1 of the present application.

By way of example, Figure 2 of the present application in conjunction with page 7, lines 19-24 of the present application disclose that electrodes 2 may comprise activated carbon powders 5, binders 6 for binding the activated carbon powders 5 to each other, and an electrolytic solution 7.

TSUCHIYA et al. only disclose activated carbon and an electrolyte. Specifically, as set forth on column 1, lines 26-32 of TSUCHIYA et al., electrodes 102 are made as paste electrodes from a concentrated slurry which is a mixture of powdery or particulate activated carbon and an electrolyte. The electrolyte serves as a binder for the carbon particles. Accordingly,

TSUCHIYA et al. do not teach a binder separate and distinct from the electrolyte.

FONG et al. teach a carbonaceous electrode having different degrees of graphitization. The graphite carbons disclosed by FONG et al. is specifically excluded from activated carbon as defined by the MSDS HyperGlossary. A copy of the definition of activated carbon as would be understood by one of ordinary skill in the electric double layer capacitor art as defined by the MSDS HyperGlossary is submitted herewith.

MPEP §2143.01 states that "the mere fact the references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." *In Re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

The features of the battery cell taught by FONG et al. are specific to the carbonation electrodes disclosed by FONG et al. Since the carbonation electrodes disclosed by FONG et al. are pertinent to graphite electrodes and since the activated carbon electrodes of TSUCHIYA et al. specifically exclude graphite electrodes, the desirability of the combination would not be obvious to one of ordinary skill in the art. Accordingly, one of ordinary skill in the art would not combine TSUCHIYA et al. and FONG et al. to render obvious claim 1 of the present application.

Claim 3 depends from claim 1 and further defines the invention and is also believed patentable over the combination of references.

Claim 6 provides a pair of electrodes separated by a separator and said electrodes including activated carbon particles and a binder binding said activated carbon particles. The comments above regarding motivation to combine TSUCHIYA et al. and FONG et al. with respect to claim 1 are equally applicable to claim 6. Claim 8 depends from claim 6 and further defines the invention and is also believed patentable over the proposed combination of references.

Claim 11 provides activated carbon particles and a binder binding said activated carbon particles. The comments above regarding claim 1 are equally applicable to claim 11. Claim 13 depends from claim 11 and further defines the invention and is also believed patentable over the proposed combination of references.

Claims 2, 7 and 12 are rejected as unpatentable over TSUCHIYA et al. in view of FONG et al. and further in view of ANDELMAN 6,127,474. This rejection is respectfully traversed.

Column 7, lines 21-23 of ANDELMAN noted in the Official Action disclose a resistivity for a flow-through capacitor. Column 7, lines 19-21 of ANDELMAN teach an energy storage capacitor that may be filled with an electrolyte. However,

ANDELMAN does not disclose a resistivity for the energy storage capacitor. The flow-through capacitor does not contain an electrolyte and thus does not meet each of the limitations of claim 1. As set forth above, TSUCHIYA et al. in view of FONG et al. do not teach or suggest what is recited in claim 1. Since claim 2 depends from claim 1 and further defines the invention, the combination of references would not render obvious claim 2.

In addition, as set forth above, there is no motivation to combine TSUCHIYA et al. in view of FONG et al. to render obvious claims 1, 6 and 11. Therefore, it would not be obvious to combine additional references, i.e. ANDELMAN, to render obvious claims 2, 7 and 12 which depend from claims 1, 6 and 11, respectively.

Claims 4, 5, 9, 10, 14 and 15 are rejected as unpatentable over TSUCHIYA et al. in view of FONG et al. and further in view of GAN et al. 6,171,729. This rejection is respectfully traversed.

GAN et al. is only cited for the teaching of a fluoro-polymer binder. GAN et al. do not teach or suggest activated carbon particles as recited in claims 1, 6 and 11 of the present application. Specifically, column 4, lines 8-14 of GAN et al. teach a cathode active material that may include fluorinated carbon. Column 4, lines 23-26 of GAN et al. further teach that the cathode mixture may have carbon black and/or graphite as a

metallic powder to improve conductivity. The above-noted carbon materials are not activated carbon particles. As set forth above, forms of elemental carbon including graphite are specifically excluded from the definition of activated carbon. Accordingly, one of ordinary skill in the art would not be motivated to combine the non-activated carbon of GAN et al. with the activated carbon of TSUCHIYA et al. to render obvious claims 1, 6 and 11 of the present application. Since claims 4, 5, 9, 10, 14 and 15 depend from one of claims 1, 6 and 11 and further define the invention, the proposed combination of references would not render obvious claims 4, 5, 9, 10, 14 and 15.

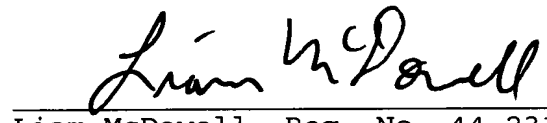
New claims 16-20 depend from claim 1 and further define the invention and are also believed patentable over the cited prior art. In addition, the new claims include features not disclosed by the proposed combination of references. Specifically, claim 16 provides that the electrolytic solution is impregnated into the activated carbon particles. Claim 19 provides that the binder bridges at least two of the activated carbon particles to inter-bind the activated carbon particles and claim 20 provides that the electrodes are non-sintered. None of these features are disclosed by the combination of references and thus these claims are believed patentable regardless of the patentability of the claims from which they depend.

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. §1.16 or under 37 C.F.R.§1.17.

Respectfully submitted,

YOUNG & THOMPSON



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**APPENDIX**:

The Appendix includes the following item:

- copy of the definition of activated carbon by the MSDS HyperGlossary

http://www.ilpi.com/msds/ref/activated charcoal.html



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# Activated Charcoal

## Definition

**Activated charcoal** or **activated carbon** is an amorphous form of carbon. This means that it has no regular atomic structure, unlike the other forms (allotropes) of elemental carbon: diamond, graphite, fullerenes or nanotubes.

Activated charcoal differs from the familiar charcoal that is used in barbecue grills. Common charcoal contains other organic residues, is much less porous, and has a lower surface area.

Trade names for activated carbon include Norit and Ultracarbon.

## Additional Info

Charcoal is obtained by burning wood, nutshells, coconut husks, animal bones, and/or other carbonaceous (carbon-containing) materials. Charcoal becomes activated by heating it with steam to approximately 1000 °C in the absence of oxygen ($O_2$). This treatment removes residual non-carbon elements and produces a porous internal microstructure having an extremely high surface area. A single gram of such material can have 400 to 1,200 square meters of surface area, 98% of it internal!

The chemical nature of amorphous carbon, combined with a high surface area and porosity, makes it an ideal medium for the **adsorption** and **absorption** of organic chemicals. Adsorption means that the chemical has an interaction with the surface of the material; absorption is incorporation into a host structure through pores (interstices). To avoid confusion, we can refer to the incorporated material as "sorbed".

Activated carbon can remove organic materials from gas streams or solutions. The amount of material removed depends on the capacity of the activated carbon as well as the affinity of the material for the carbon. Typical uses are to remove odors and volatile organic compounds (VOC's).

Laboratory chemists often use activated carbon to remove colored impurities from crude organic reaction products. Typically, one dissolves the material in a solvent (if it is not already a liquid), adds activated carbon, and then filters the mixture to remove the carbon.